

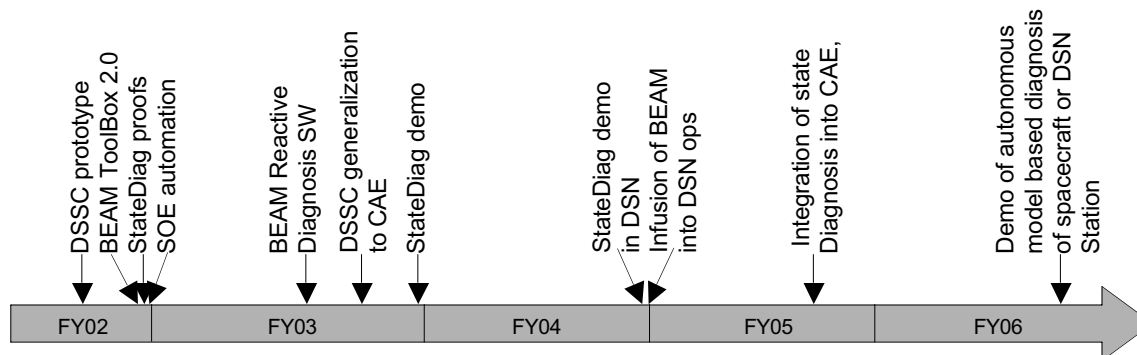
DSN Automation & Monitoring Work Area

Overall Objective

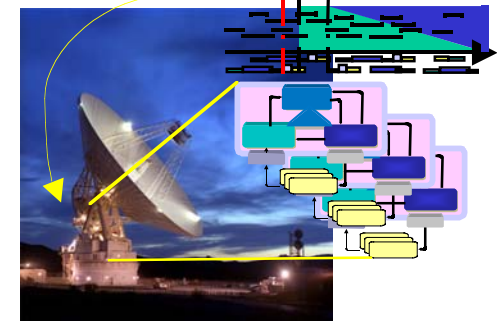
Develop hierarchical automation technology for the Deep Space Network that can be used at the subsystem, antenna, and complex levels to provide higher reliability DSN services and make for more effective use of DSN resources; develop widely applicable new technology for automated fault detection, isolation, and recovery to reduce both the risk and cost of space mission operations.

Products and Goals

- A prototype Deep Space Station Controller (DSSC) to validate this technology for highly autonomous station-centric operations of DSN to enhance reliability and reduce costs
- A toolbox of coherent monitoring technologies (BEAM) adding Data-Driven Model Reconstruction, which allows models of system behavior to be inferred from large datasets
- Proofs for algorithms that solve diagnosis problems. These algorithms are envisioned to enable automated recovery for any space mission system within NASA
- Prototype for automated correction of mistakes or inconsistencies in mission Sequence of Events (SOE) inputs that are used to guide DSN support to each mission, with the goal of improving the reliability of operations.



DSN Automation



Automated Fault Detection, Isolation & Recovery

